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FARM WATER SUPPLY ASSISTANCE POLICY

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PROVINCE OF ALBERTA
DEPARTMENT of AGRICULTURE

HON. L. C. HALMRAST
Minister

MR. FARMER — READ THIS
Before You Apply for Assistance

EDMONTON
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Farm Water Supply Assistance Policy

Area:

The area or areas in which this policy will be applicable shall be the area or areas so declared from time to time by the Minister of Agriculture.

Basis of Assistance:

The assistance provided under the terms of this policy will be available only to bona fide farmers residing in a declared area. Assistance will be in the form of a subsidy at a rate per cubic yard excavated and in a maximum amount to be determined from time to time by the Minister of Agriculture. It will be paid to the applicant and **will not be assignable.**

1. Assistance under this policy will be limited to the excavation of one reservoir per farm unit. A farm unit is defined as all of the land operated as a unit by one farm family under one management.
2. Assistance will not be available under this policy in cases where the farmer, through good fortune or otherwise, has had a reservoir excavated without cost to him.
3. Application for subsidy should be made immediately that excavation is completed and will not necessarily be entertained by the Department if received more than three months after such completion.

Specifications of Dugouts:

Applicants for assistance under this policy should understand the following minimum specifications, and should ensure that they are understood by the contractor who excavates the dugout.

1. **Capacity**—To qualify for assistance, the dugout shall be an excavation of not less than fifteen hundred (1500) cubic yards. (See Fig. 2.)
2. **Depth**—The dugout shall have an average depth of not less than ten (10) feet. The average depth shall be found by taking the average of several measurements of the distance from the normal ground line to the flat surface at the bottom of the excavation.

3. **Side and End Slopes**—Side and end slopes are to conform as closely as practicable to those recommended in the table showing size and general design. (See Fig. 2.)

4. **Waste Piles**—All waste piles of earth at sides or ends of the dugout shall be placed a distance of not less than ten (10) feet from the edge of the excavation.

5. The Department is of the opinion that the dugouts which have been protected from erosion, livestock, road dust, evaporation and accidents are exceptions, and believes that they should be the rule. Before assistance will be granted in the future an adequate fence must be constructed to protect the dugout from damage and pollution by livestock, and from accidents. An adequate fence for protection from livestock will be considered to be not less than three strands of barb wire on posts not more than one rod apart. For dugouts in the vicinity of farm buildings, an adequate fence will be constructed of woven wire which is "child-tight" and on posts not more than one rod apart. District Agriculturists will be instructed to observe these minimums.

6. **Measurements**—The measurements made by officials of the Department of Agriculture shall be used as a basis for any assistance granted under this Policy.

APPLICANTS ARE WARNED THAT FAILURE TO HAVE THE DUGOUT CONSTRUCTED IN ACCORDANCE WITH THE FOREGOING SPECIFICATIONS MAY RESULT IN ITS NOT BEING APPROVED FOR ASSISTANCE.

PROCEDURE:

On completion of the dugout, an Application for assistance under the Policy must be completed on the Form attached to this folder. These are available from the Offices of District Agriculturists, Municipal Secretaries and Inspectors of the Department of Municipal Affairs. The completed Application must be forwarded to the District Agriculturist, who will make an inspection of the dugout, take necessary measurements, and forward the information to the Department of Agriculture at Edmonton.

When an Application for assistance is made by a tenant, the owner of the land must approve the application. Applicants should be certain that their names and addresses are correctly given on the Application Form.

SITES FOR DUGOUTS:

A dugout consists of a deep pit excavated in a drainage basin for storage of farm or domestic water supply. The site for the dugout should be convenient and accessible, but the extent and nature of the drainage area, from which water will run into the dugout, is of primary importance. Experience has shown that to maintain a water supply for an average-size dugout from year to year requires a drainage area of at least 35 acres.

The dugout should be placed at the lowest point in the drainage area, but special care should be taken to ensure that no drainage from barns, manure piles, or other sources of pollution can reach the water supply.

The nature of the subsoil at the site of the dugout is important. Clay or a good clay mixture is satisfactory, but when there is any doubt as to the water-holding capacity of the subsoil, test holes should be put down with a post-hole auger. Should a farmer require advice regarding the most suitable location for a dugout, he should contact the local District Agriculturist.

Due to seepage and evaporation losses, the effective capacity of a dugout will be about two-thirds of its full capacity. For details of size and capacity refer to Figure 2.

PROTECTION OF DUGOUTS:

From Erosion—As soon as possible following excavation, the edge of the dugout and the area around it should be seeded down to some tough-rooted perennial grass to reduce damage from erosion.

From Livestock—Applicants for assistance under this Policy are under obligation to protect the dugout from damage and pollution by livestock (See Sec. 5 of Specifications). The practice of allowing livestock free access is contrary to your agreement with the Department; it will eventually ruin the reservoir and it is a constant menace to the purity of the water. The well, if any, should be well banked and have a light cover.

From Road Dust—Too many dugouts are excavated near roads. Road dust and ditch water then become additional menaces to the purity of the water.

From Evaporation—A hedge or trees surrounding the dugout, or at least on the direction of prevailing winds, will do much to prevent excessive evaporation. If placed 50 feet back from the dugout there should not be too much trouble from leaves and the hedge will trap snow to provide additional runoff water. It will also add to the appearance of your farm or farmstead.

Suitable varieties for this planting are: Caragana, North West Poplar (or male trees of other Poplars), Laurel-Leafed Willow, Manitoba Maple, American Elm, Green Ash, Colorado Spruce.

Against Accidents—When a child is drowned in a river or lake it is a tragedy but it is accidental. When a child is drowned in a farm dugout it is still a tragedy but it is more than that . . . it is **negligence and carelessness.** You think it won't happen to your children? Maybe not and we hope it won't, **but** . . . it does happen to some children **every year.** And **if** it should be yours, your remorse and regret will not restore your child but will be intensified by the knowledge that you could have prevented it.

When you excavate a dugout, you create a hazard. When you create a hazard you owe it to your family to take precau-

tions against it. What precautions? We recommend two . . . simple and not expensive:

1. Build the fence, **as you have agreed to do,** with **woven wire** close enough to prevent small children from climbing through it.

2. Provide a **Throwing Buoy.** This is simply an airtight one- or two-gallon metal can weighted with a little sand or gravel, to the handle of which is attached about 60 feet of $\frac{1}{4}$-inch rope. To the other end of the rope is attached a wooden block to prevent it from sinking. These are then mounted on a cross-armed post. To use this buoy step on the wooden block, hold the rope coil in the left hand and throw the pail with an underhand swing **well past the victim** and draw it to him. After rescue, apply artificial respiration if necessary. **Make it your business** to learn how this is done . . . it is not easy to explain in words but it is not difficult to do. Any doctor, nurse or other person trained in first aid can show you how it is done.

Don't give up . . . you may save a life.

Do not delay . . . Take Safety Precautions **NOW!**

WATER RIGHTS:

Wherever the construction of a dugout or of any earthwork will directly affect the flow of any stream or water course, the farmer must apply to the Director, Water Resources Branch, EDMONTON, for special permission to construct the project. It should be distinctly understood that no assistance will be available through this Policy unless such permission has been granted, and the Department is satisfied that the project will provide a satisfactory and permanent water supply. Few farmers are in a position to spend the money and time required to construct a properly designed dam with a suitable spillway and they should not attempt to do so without the advice of a competent engineer.

FILTERING DUGOUT WATER FOR HOUSEHOLD USE

Where dugout water is to be used for household purposes it should be filtered. Two types of filter that may be installed for this purpose are the backwash filter and the trench filter.

Backwash Filter

This is a small watertight box of wood or metal, placed at or near the center of the dugout and connected to the well by means of a pipe 1 inch in diameter or larger. Construction of this filter is shown in Figure 3, along with the piping layout that is installed in the well. In operation, dugout water seeps through the filter, then travels across to the well through the pipe, eventually filling the well to the level of the water in the dugout. When the filter becomes plugged or slows down considerably the filter must be backwashed. To do this, a force pump is connected to the top of the backwash pipe and the pump put in operation. The gate valve is then **slowly** closed, so that the water is gradually forced back through the filter. For the size of filter shown, the maximum rate of backwashing should not exceed 15 gallons per minute.

Advantages of this type of filter are: it does not become permanently plugged; and it does not usually introduce as much hardness to the water as the trench-type filter.

Trench-Type Filter

As shown in Figure 4, a trench 2 to 3 feet wide and 30 to 50 feet long is dug to the depth of the dugout and connecting it to the well. This trench is filled to a depth of 2 to 3 feet with clean, fine gravel, containing at least 50 per cent sand, and then the trench is backfilled with earth. The dugout or inlet end of the trench is covered with rocks of the 2" to 6" size to help keep foreign material from plugging up the gravel filter bed.

(Continued on Page 13)

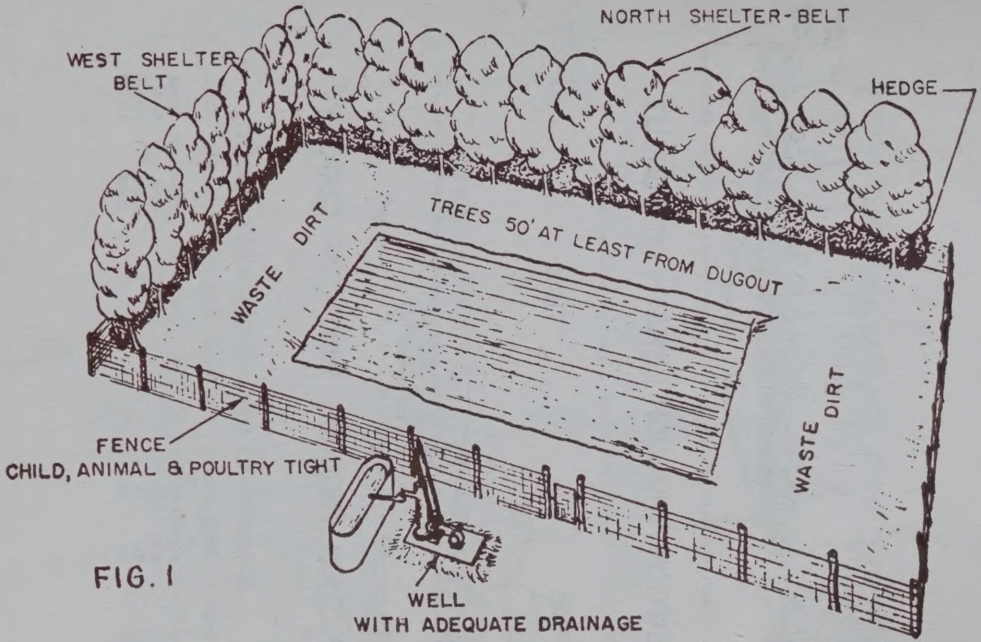
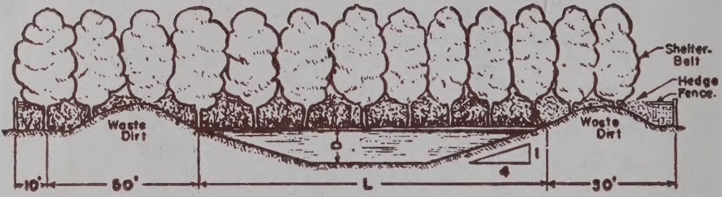


FIG. I

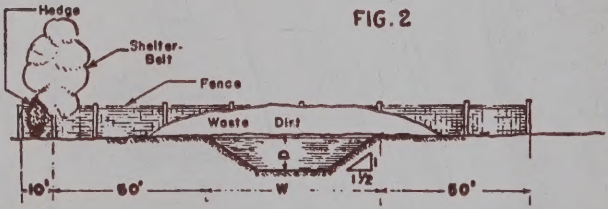
PERSPECTIVE VIEW OF DUGOUT

SHOWING WELL, FENCE, TREES & HEDGE AS RECOMMENDED



SECTION THROUGH LENGTH OF DUGOUT

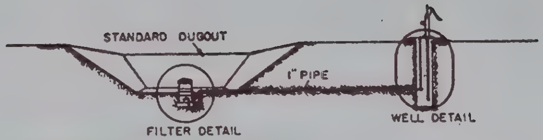
FIG. 2



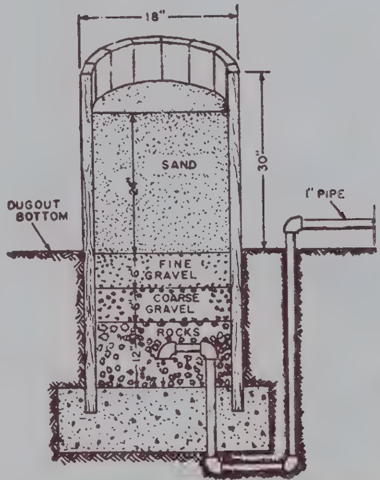
SECTION THROUGH WIDTH OF DUGOUT

(SUGGESTED DIMENSIONS OF DUGOUT)

Length L	Width W	Depth D	Side Slope	End Slope	Volume	Gal.
120 Ft.	60 Ft.	10 Ft.	1½ to 1	4 to 1	1555 cu.yds.	88635
120	60	12	"	"	1728	103496
120	60	14	"	"	1904	108528
150	60	10	"	"	2055	117135

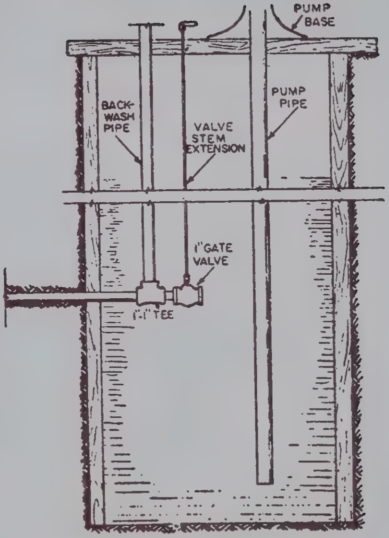


BACKWASH FILTER & WELL

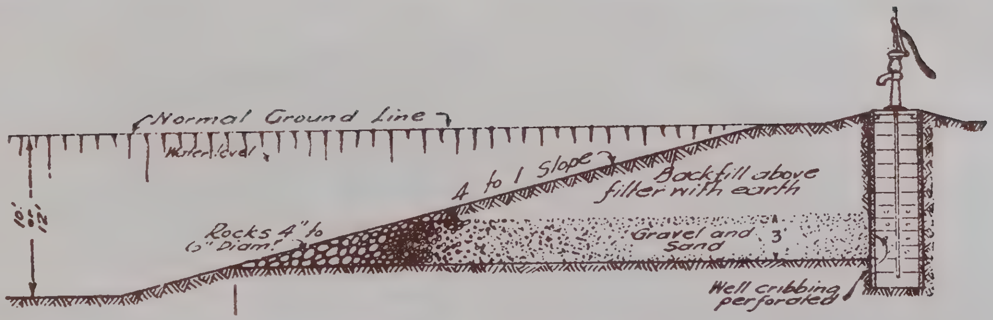


BACKWASH FILTER DETAIL

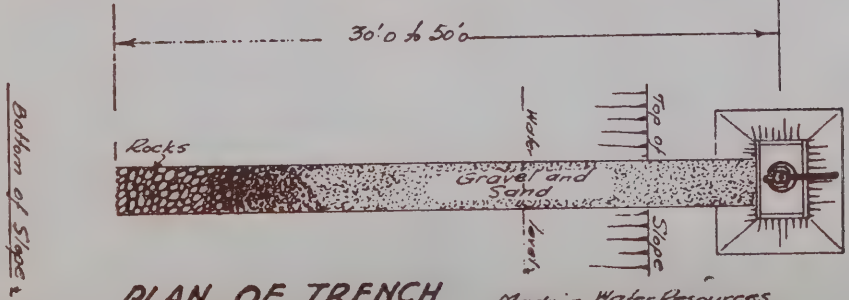
FIG. 3



WELL & PIPING DETAIL



SECTION ON ℄ OF FILTER TRENCH & WELL.



PLAN OF TRENCH
(Before back-filling)

FIG. 4

Made in Water Resources Office. Edmonton. 1944

To further purify the water, a charcoal filter may be installed in this trench. Plans for this may be obtained from the Department of Public Health.

Sanitary Conditions

Any dugout that is used for the domestic water supply can easily endanger the health of the household unless proper precautions are taken. The most important of these are:

1. Safe snow-trap or drainage area where **none** of the farmyard runoff can get into the dugout.
2. Adequate fencing to keep **all** livestock (and children) away from the dugout.
3. Drainage so that water from the well or stock trough does **not** drain back to the dugout.

All of these precautions must be observed if the dugout water is to be safe.

CONTROL OF ALGAE

One of the problems which may arise in the use of dugouts is the presence of algae (green scum) which may impart an objectionable taste and appearance to the water. Algae are a minute form of plant life (harmless) commonly found in water which is not being circulated.

The usual method employed for the control of algae is by the use of copper sulphate (blue vitriol). This may be readily purchased at low cost from most hardware and drug stores. Copper sulphate is not poisonous to humans in the amounts used to kill algae.

The usual dosage is one pound of copper sulphate for every 100,000 gallons of water in the dugout. One-quarter of a pound would be required for 25,000 gallons. The treatment with this dosage should be repeated every few weeks during the summer. The copper sulphate dissolves quite quickly. It can be applied to the dugout by suspending a cloth bag with copper sulphate in it, from a rope that will stretch across the dugout. With one man at each end, the container may be moved on successive trips so that the chemical will be evenly distributed over the whole surface.

Killing the algae may have the affect of increasing the taste and odor for a short time. It is therefore desirable that the treatment be carried out at intervals which will prevent the initial growth of algae. Experience will dictate the frequency required in individual cases. More frequent treatment will be required in warm weather.

PROVINCE OF ALBERTA
DEPARTMENT OF AGRICULTURE

FARM WATER SUPPLY ASSISTANCE POLICY

APPLICATION

When dugout is ready for Inspection, complete this Form and Mail or Deliver it to your District Agriculturist

....

I, ... of ....
(Print Name) (Post Office)

hereby make application for assistance through the provisions of the above Policy for the excavation of a dugout reservoir for water storage on the land described hereunder:

.................Quarter of Sec.................Township.................Range.................W. of the.................M.

I live on the.................Quarter of Sec.................Township.................Range.................W.

of the.................M. This dugout was completed on..
(Insert Date)

It was excavated by .... of ....
(Contractor's Name) (Address)

at an approximate total cost to me of $..

This is to certify that a dugout has not previously been subsidized on this farm.

I am a bona fide farmer, and I own ....Cattle ....Horses ....Sheep ....Hogs.

In making this Application, I fully understand that the following minimum specifications are required to qualify for assistance under the Policy:—

1. CAPACITY: The dugout shall be an excavation of not less than fifteen hundred (1500) cubic yards.
2. DEPTH: The dugout must be capable of storing water of a minimum average depth of ten (10) feet.
3. SIDE AND END SLOPES: Side and end slopes are to conform as closely as practicable to those recommended in the Policy outline.
4. WASTE PILES: All waste piles of earth at sides or ends of the dugout shall be placed a distance of not less than ten (10) feet from the edge of the excavation and shall be levelled and seeded to grass.
5. PROTECTION FROM STOCK: An adequate fence must be constructed to protect the dugout from damage and pollution by livestock, and to protect children from drowning.

On approval of my application by the Department of Agriculture, I understand that I am entitled to receive assistance at the rate and in the maximum amount determined by the Minister of Agriculture.

Dated at ....
(Signature of Applicant)

on ...., 19.......... Approved by ....
(Registered Owner)

DISTRICT
AGRICULTURIST: File this Application Form in your Office.

INSPECTION CERTIFICATE No. ....